THE AMENDMENTS

In the Claims:

1. (Currently Amended) An optical information carrier comprising a solid material having immobilized proteorhodopsin; wherein said ~~proteohrodopsin~~ proteorhodopsin is detergent-solubilized, cellular membrane-free, and in a monomer or oligomer form; said proteorhodopsin produces a photocyle when exposed to light of excitation wavelength.

2. (Original) The optical information carrier according to Claim 1, further comprising a substrate selected from the group consisting of glass, paper, metal, fabric material, plastic material, wherein said solid material is deposited on said substrate.

3. (Original) The optical information carrier according to Claim 1, wherein said optical information carrier is a fraud-proof data carrier or an optical data storage material.

4. (Original) The optical information carrier according to Claim 1, wherein said solid material comprises one or more hydrophilic polymers that are capable of forming a homogeneous phase with proteorhodopsin prior to solidification to a solid form.

5. (Original) The optical information carrier according to Claim 4, wherein said hydrophilic polymer is selected from the group consisting of silica sol-gel, gelatin, polyvinylalcohol, agarose, agar, methyl cellulose, polyvinyl acetate, polyvinyl pyrrolidone, and polyethylene glycol.

6. (Original) The optical information carrier according to Claim 4, wherein said hydrophilic polymer is not polyacrylamide.

7. (Original) The optical information carrier according to Claim 1, wherein said hydrophilic polymer is selected from the group consisting of silica sol-gel, gelatin, and polyvinylalcohol.

8. (Original) The optical information carrier according to Claim 1, wherein said

solid material is in the form of a film or a thickly cast object.

9. (Original) The optical information carrier according to Claim 1, wherein said carrier produces an erasable image.

10. (Previously Presented) The optical information carrier according to Claim 3, wherein the immobilized proteorhodopsin changes color upon illumination with a light of the excitation wavelength of the proteorhodopsin.

11. (Cancelled)

12. (Previously Presented) The optical information carrier according to Claim 1, wherein said proteorhodopsin is stable for at least one month at room temperature.

13. (Original) The optical information carrier according to Claim 12, wherein said solid material comprises one or more hydrophilic polymers that are capable of forming a homogeneous phase with proteorhodopsin prior to solidification to a solid form.

14. (Original) The optical information carrier according to Claim 13, wherein said hydrophilic polymer is selected from the group consisting of silica sol gel, gelatin, polyvinylalcohol, polyacrylamide, agarose, agar, methyl cellulose, polyvinyl acetate and polyvinyl pyrrolidone, and polyethylene glycol.

15-25. (Cancelled)

26. (Previously Presented) A method of optically storing information on a material containing immobilized proteorhodopsin, comprising:

(a) directing onto only a selected portion of a material containing immobilized proteorhodopsin light of a first spectral range representing optical information to be stored;

(b) exposing the selected portion of the material containing immobilized

proteorhodopsin to switch the proteorhodopsin from its basal state to its M-state; and

(c) storing in said material an optical image representing optical information stored;

wherein the stored image comprises M-state material having altered absorption spectra at a second spectral range.

27. (Original) The method according to Claim 26, further comprising directing light of said second spectral range onto said material to cause said M-state material to switch back to said basal state, whereby the optical image is erased.

28. (Previously Presented) A method of producing a three-dimensional optical image for information storage, comprising:

(a) directing onto only selected locations and selected layers of a three-dimensional optical information storage material that contains immobilized proteorhodopsin a first spectral range representing optical information to be stored;

(b) exposing the selected locations and selected layers of the optical information storage material to switch the proteorhodopsin from its basal state to its M-state; and

(c) producing in said material a three-dimensional optical image representing optical information stored; wherein the image comprises M-state material having altered absorption spectra at a second spectral range.

29. (Previously Presented) An optical data storage device comprising a light source and an optical data information carrier comprising a solid material having immobilized detergent-solubilized, cellular membrane-free proteorhodopsin, in a monomer or oligomer form, wherein the light source emits a writing light to convert the proteorhodopsin from a basal state to a M-state.

30. (Original) The optical data storage device according to Claim 29, further

comprising a second light source that emits a deleting light to convert the M-state into the basal state.

31-32. (Cancelled)

33. (Previously Presented) The method according to Claim 26, wherein said proteorhodposin is detergent-solubilized, cellular membrane-free, and in a monomer or oligomer form.

34. (Previously Presented) The method according to Claim 28, wherein said proteorhodposin is detergent-solubilized, cellular membrane-free, and in a monomer or oligomer form.